

AMENDMENTS TO THE CLAIMS

The following Listing of Claims will replace all previous versions of claims in the application:

Listing of Claims

1. (Previously presented) A method of controlling positive pressure assist to a patient during expiration, the method comprising:
 - measuring a level of electrical activity of a patient's respiration-related muscle during expiration; and
 - adjusting a level of positive pressure assist to the patient during expiration in response to the measured level of electrical activity; wherein adjusting the level of positive pressure assist to the patient during expiration comprises minimizing the level of electrical activity of the patient's respiration-related muscle during expiration; and wherein minimizing the level of electrical activity of the patient's respiration-related muscle during expiration controls stress on the respiration-related muscle while avoiding patient's lung collapse.
2. (Original) A method of controlling positive pressure assist to a patient as defined in claim 1, wherein measuring a level of electrical activity of a patient's respiration-related muscle during expiration comprises:
 - measuring a level of electrical activity of the patient's diaphragm during expiration.
3. (Original) A method of controlling positive pressure assist to a patient as defined in claim 1, wherein adjusting a level of positive pressure assist to the patient during expiration comprises:
 - adjusting a level of a ventilation feature related to a mode of mechanical ventilation providing assist to a patient during expiration.

4. (Original) A method of controlling positive pressure assist to a patient as defined in claim 3, comprising:
 - selecting the ventilation feature from the group consisting of PEEP, CPAP and BiPAP.
5. (Original) A method of controlling positive pressure assist to a patient as defined in claim 1, wherein measuring a level of electrical activity of a patient's respiration-related muscle during expiration comprises:
 - measuring a level of electrical activity of the patient's respiration-related muscle during each patient's expiratory phase.
6. (Original) A method of controlling positive pressure assist to a patient as defined in claim 1, wherein measuring a level of electrical activity of a patient's respiration-related muscle during expiration comprises:
 - dividing a patient's expiratory phase into a plurality of segments; and
 - measuring a level of electrical activity of the patient's respiration-related muscle during each segment of the patient's expiratory phase.
7. (Original) A method of controlling positive pressure assist to a patient as defined in claim 3, wherein adjusting a level of positive pressure assist to the patient during expiration comprises:
 - comparing the level of the ventilation feature to an upper safety threshold; and
 - increasing the level of the ventilation feature by a predetermined step when the comparison indicates that the level of the ventilation feature is lower than the upper safety threshold.
8. (Original) A method of controlling positive pressure assist to a patient as defined in claim 7, wherein:
 - measuring a level of electrical activity of a patient's respiration-related muscle during expiration comprises measuring the level of electrical activity of the patient's

respiration-related muscle during expiration after the level of the ventilation feature has been increased by the predetermined step; and

adjusting the level of positive pressure assist to the patient during expiration comprises comparing a last measured level of electrical activity of the patient's respiration-related muscle during expiration to a previously stored lowest measured level of electrical activity of the patient's respiration-related muscle during expiration.

9. (Previously presented) A method of controlling positive pressure assist to a patient during expiration, the method comprising:

measuring a level of electrical activity of a patient's respiration-related muscle during expiration; and

in response to the measured level of electrical activity, adjusting a level of positive pressure assist to the patient during expiration in view of minimizing the level of electrical activity of the patient's respiration-related muscle during expiration;

wherein adjusting the level of positive pressure assist to the patient during expiration comprises:

comparing a last measured level of electrical activity of the patient's respiration-related muscle during expiration to a previously stored lowest measured level of electrical activity of the patient's respiration-related muscle during expiration; and

when the comparison between the last measured level of electrical activity and the previously stored lowest measured level of electrical activity indicates that the last measured level of electrical activity is lower than the previously stored lowest measured level of electrical activity, storing the last measured level of electrical activity as the lowest measured level of electrical activity.

10. (Previously presented) A method of controlling positive pressure assist to a patient during expiration, the method comprising:

measuring a level of electrical activity of a patient's respiration-related muscle during expiration; and

in response to the measured level of electrical activity, adjusting a level of positive pressure assist to the patient during expiration in view of minimizing the level of electrical activity of the patient's respiration-related muscle during expiration;

wherein adjusting the level of positive pressure assist to the patient during expiration comprises:

adjusting a level of a ventilation feature related to a mode of mechanical ventilation providing assist to the patient during expiration;

comparing a last measured level of electrical activity of the patient's respiration-related muscle during expiration to a previously stored lowest measured level of electrical activity of the patient's respiration-related muscle during expiration; and

controlling the level of the ventilation feature in relation to the comparison between the last measured level of electrical activity and the previously stored lowest measured level of electrical activity.

11. (Currently amended) A method of controlling positive pressure assist to a patient during expiration, the method comprising:

measuring a level of electrical activity of a patient's respiration-related muscle during expiration; and

in response to the measured level of electrical activity, adjusting a level of positive pressure assist to the patient during expiration in view of minimizing the level of electrical activity of the patient's respiration-related muscle during expiration;

wherein adjusting the level of positive pressure assist to the patient during expiration comprises:

comparing a last measured level of electrical activity of the patient's respiration-related muscle during expiration to a previously measured lowest level of electrical activity of the patient's ~~respiratory-related~~ respiration-related muscle; and

adjusting the level of positive pressure assist to the patient during expiration in relation to the comparison between the last measured level of electrical activity and the previously measured lowest level of electrical activity.

12. (Currently amended) A method of controlling positive pressure assist to a patient as defined in claim 11, wherein adjusting the level of positive pressure assist to the patient during expiration comprises:
 - increasing the level of positive pressure assist to the patient during expiration when the comparison between the last measured electrical activity and the previously measured lowest level of electrical activity indicates that the electrical activity of the patient's ~~respiratory-related~~ respiration-related muscle during expiration decreases.
13. (Currently amended) A method of controlling positive pressure assist to a patient as defined in claim 11, wherein adjusting the level of positive pressure assist to the patient during expiration comprises:
 - increasing the level of positive pressure assist to the patient during expiration when the comparison between the last measured level of electrical activity and the previously measured lowest level of electrical activity indicates that the electrical activity of the patient's ~~respiratory-related~~ respiration-related muscle during expiration has not ceased to increase.
14. (Original) A method of controlling positive pressure assist to a patient as defined in claim 11, wherein adjusting a level of positive pressure assist to the patient during expiration comprises:
 - before comparing the last measured level of electrical activity to the previously stored lowest measured level of electrical activity, determining whether the last measured level of electrical activity is higher than a noise level.
15. (Original) A method of controlling positive pressure assist to a patient as defined in claim 3, comprising:
 - reducing the adjusted level of the ventilation feature;
 - monitoring the effect of reducing the adjusted level of the ventilation feature on the level of electrical activity of the patient's respiration-related muscle during expiration; and

adjusting the level of positive pressure assist to the patient during expiration both (a) in relation to the monitored effect of reducing the adjusted level of the ventilation feature on the level of electrical activity of the patient's respiration-related muscle during expiration and (b) in view of minimizing the level of electrical activity of the patient's respiration-related muscle during expiration.

16. (Previously presented) A device for controlling positive pressure assist to a patient during expiration, comprising:

means for measuring a level of electrical activity of a patient's respiration-related muscle during expiration; and

means for adjusting a level of positive pressure assist to the patient during expiration in response to the measured level of electrical activity; wherein the means for adjusting the level of positive pressure assist to the patient during expiration comprises means for minimizing the level of electrical activity of the patient's respiration-related muscle during expiration; and wherein minimizing the level of electrical activity of the patient's respiration-related muscle during expiration controls stress on the respiration-related muscle while avoiding patient's lung collapse.

17. (Currently amended) A device for controlling positive pressure assist to a patient during expiration, comprising:

a detector of a level of electrical activity of a patient's respiration-related muscle during expiration; and

a controller of a level of positive pressure assist to the patient during expiration, the controller being supplied with the ~~measured~~ detected level of electrical activity and controlling the level of positive pressure assist to the patient during expiration, the controller further minimizing the level of electrical activity of the patient's respiration-related muscle during expiration, wherein minimizing the level of electrical activity of the patient's respiration-related muscle during expiration controls stress on the ~~respiratory-related~~ respiration-related muscle while avoiding patient's lung collapse.

18. (Original) A device for controlling positive pressure assist to a patient as defined in claim 17, wherein the detector is:
 - a detector of a level of electrical activity of the patient's diaphragm during expiration.
19. (Currently amended) A device for controlling positive pressure assist to a patient as defined in claim 17, wherein the controller is:
 - a controller of a level of a ventilation feature related to a mode of mechanical ventilation providing assist to ~~the~~ patient during expiration.
20. (Original) A device for controlling positive pressure assist to a patient as defined in claim 19, wherein:
 - the ventilation feature is selected from the group consisting of PEEP, CPAP and BiPAP.
21. (Original) A device for controlling positive pressure assist to a patient as defined in claim 17, wherein the detector detects a level of electrical activity of the patient's respiration-related muscle during each patient's expiratory phase.
22. (Original) A device for controlling positive pressure assist to a patient as defined in claim 17, wherein the detector comprises:
 - a divider of a patient's expiratory phase into a plurality of segments; and
 - a sensor of a level of electrical activity of the patient's respiration-related muscle during each segment of the patient's expiratory phase.
23. (Original) A device for controlling positive pressure assist to a patient as defined in claim 19, wherein the controller comprises:
 - a first comparator of the level of the ventilation feature to an upper safety threshold; and

a unit for increasing the level of the ventilation feature by a predetermined step when the comparison conducted by the first comparator indicates that the level of the ventilation feature is lower than the upper safety threshold.

24. (Currently amended) A device for controlling positive pressure assist to a patient as defined in claim 23, wherein during expiration, the device comprising:

a detector of a level of electrical activity of a patient's respiration-related muscle during expiration;

a controller of a level of positive pressure assist to the patient during expiration, the controller being supplied with the detected level of electrical activity and controlling the level of positive pressure assist to the patient during expiration, the controller further minimizing the level of electrical activity of the patient's respiration-related muscle during expiration, wherein minimizing the level of electrical activity of the patient's respiration-related muscle during expiration controls stress on the respiration-related muscle while avoiding patient's lung collapse;

wherein the controller comprises:

a first comparator of a level of a ventilation feature related to a mode of mechanical ventilation providing assist to the patient during expiration to an upper safety threshold; and

a unit for increasing the level of the ventilation feature by a predetermined step when the comparison conducted by the first comparator indicates that the level of the ventilation feature is lower than the upper safety threshold;

wherein the detector detects the level of electrical activity of the patient's respiration-related muscle during expiration after the level of the ventilation feature has been increased by the predetermined step; and

wherein the controller comprises a second comparator of a last ~~measured~~ detected level of electrical activity of the patient's respiration-related muscle during expiration to a previously stored lowest ~~measured~~ detected level of electrical activity of the patient's respiration-related muscle during expiration.

25. (Currently amended) A device for controlling positive pressure assist to a patient during expiration, the device comprising:

a detector of a level of electrical activity of a patient's respiration-related muscle during expiration;

a controller of a level of positive pressure assist to the patient during expiration, the controller being supplied with the ~~measured~~ detected level of electrical activity and controlling the level of positive pressure assist to the patient during expiration in view of minimizing the level of electrical activity of the patient's respiration-related muscle during expiration;

a comparator of a last ~~measured~~ detected level of electrical activity of the patient's respiration-related muscle during expiration to a previously stored lowest ~~measured~~ detected level of electrical activity of the patient's ~~respiratory-related~~ respiration-related muscle during expiration; and

a store for storing the last ~~measured~~ detected level of electrical activity as the lowest ~~measured~~ detected level of electrical activity when the comparison conducted by the comparator indicates that the last ~~measured~~ detected level of electrical activity is lower than the previously stored lowest ~~measured~~ detected level of electrical activity.

26. (Currently amended) A device for controlling positive pressure assist to a patient during expiration, the device comprising:

a detector of a level of electrical activity of a patient's respiration-related muscle during expiration;

a controller of a level of positive pressure assist to the patient during expiration, the controller being supplied with the ~~measured~~ detected level of electrical activity and controlling the level of positive pressure assist to the patient during expiration in view of minimizing the level of electrical activity of the patient's respiration-related muscle during expiration;

wherein the controller is a controller of a level of a ventilation feature related to a mode of mechanical ventilation providing assist to ~~the~~ the patient during expiration and comprises:

a comparator of a last ~~measured~~ detected level of electrical activity of the patient's respiration-related muscle during expiration to a previously stored lowest ~~measured~~ detected level of electrical activity of the patient's ~~respiratory-related~~ respiration-related muscle during expiration; and

a sub-controller of the level of the ventilation feature in relation to the comparison conducted by the comparator between the last ~~measured~~ detected level of electrical activity and the previously stored lowest ~~measured~~ detected level of electrical activity.

27. (Currently amended) A device for controlling positive pressure assist to a patient during expiration, the device comprising:

a detector of a level of electrical activity of a patient's respiration-related muscle during expiration;

a controller of a level of positive pressure assist to the patient during expiration, the controller being supplied with the ~~measured~~ detected level of electrical activity and controlling the level of positive pressure assist to the patient during expiration in view of minimizing the level of electrical activity of the patient's respiration-related muscle during expiration;

wherein the controller comprises:

a comparator of a last ~~measured~~ detected level of electrical activity of the patient's respiration-related muscle during expiration to a previously ~~measured~~ detected lowest level of electrical activity of the patient's ~~respiratory-related~~ respiration-related muscle during expiration; and

a sub-controller of the level of positive pressure assist to the patient during expiration in relation to the comparison conducted by the comparator between the last ~~measured~~ detected level of electrical activity and the previously ~~measured~~ detected lowest level of electrical activity.

28. (Currently amended) A device for controlling positive pressure assist to a patient as defined in claim 27, wherein:

the sub-controller increases the level of positive pressure assist to the patient during expiration when the comparison conducted by the comparator indicates that the electrical activity of the patient's ~~respiratory-related~~ respiration-related muscle during expiration decreases.

29. (Currently amended) A device for controlling positive pressure assist to a patient as defined in claim 27, wherein:

the sub-controller increases the level of positive pressure assist to the patient during expiration when the comparison conducted by the comparator indicates that the electrical activity of the patient's ~~respiratory-related~~ respiration-related muscle during expiration has not ceased to increase.

30. (Currently amended) A device for controlling positive pressure assist to a patient as defined in claim 27, wherein the controller comprises:

a second comparator for determining whether the last ~~measured~~ detected level of electrical activity is higher than a noise level before comparing the last ~~measured~~ detected level of electrical activity to the previously ~~measured~~ detected lowest level of electrical activity.